Abstract Submitted
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Electronic Realization Of Chaotic Systems[1] CHRISTOPHER PARKER, JEFFREY LEISETH, MICHAEL BRAUNSTEIN[2], SHARON ROSELL[3], TRAVIS PETERSEN, EVAN MASTERS, ERIC KANGAS, Central Washington University — The CWU chapter of the SPS is investigating electronic realizations of chaotic systems. Understanding the fundamental principles that govern this behavior is sought not only for its inherent educational value, but for its applications in physics, information theory, meteorology, biology and mathematics. J.C. Sprott has reported on a class of chaotic differential equations that can, in principle, be simply realized using discrete electronic components. These circuits can be used to investigate chaotic behavior in a simple system. We will present computational and experimental data collected from one simple chaotic circuit. Our computational results include eigenvalues and eigenvectors of the Jacobian, return maps, largest Lyapunov exponents and the numerical approximation of solutions to the differential equation utilized. Our data include output voltages at different points in the circuit representing the phase space behavior of the system. A comparison between the model and collected experimental data will be provided to analyze the realization of the nonlinear differential equation.

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